FIG.1

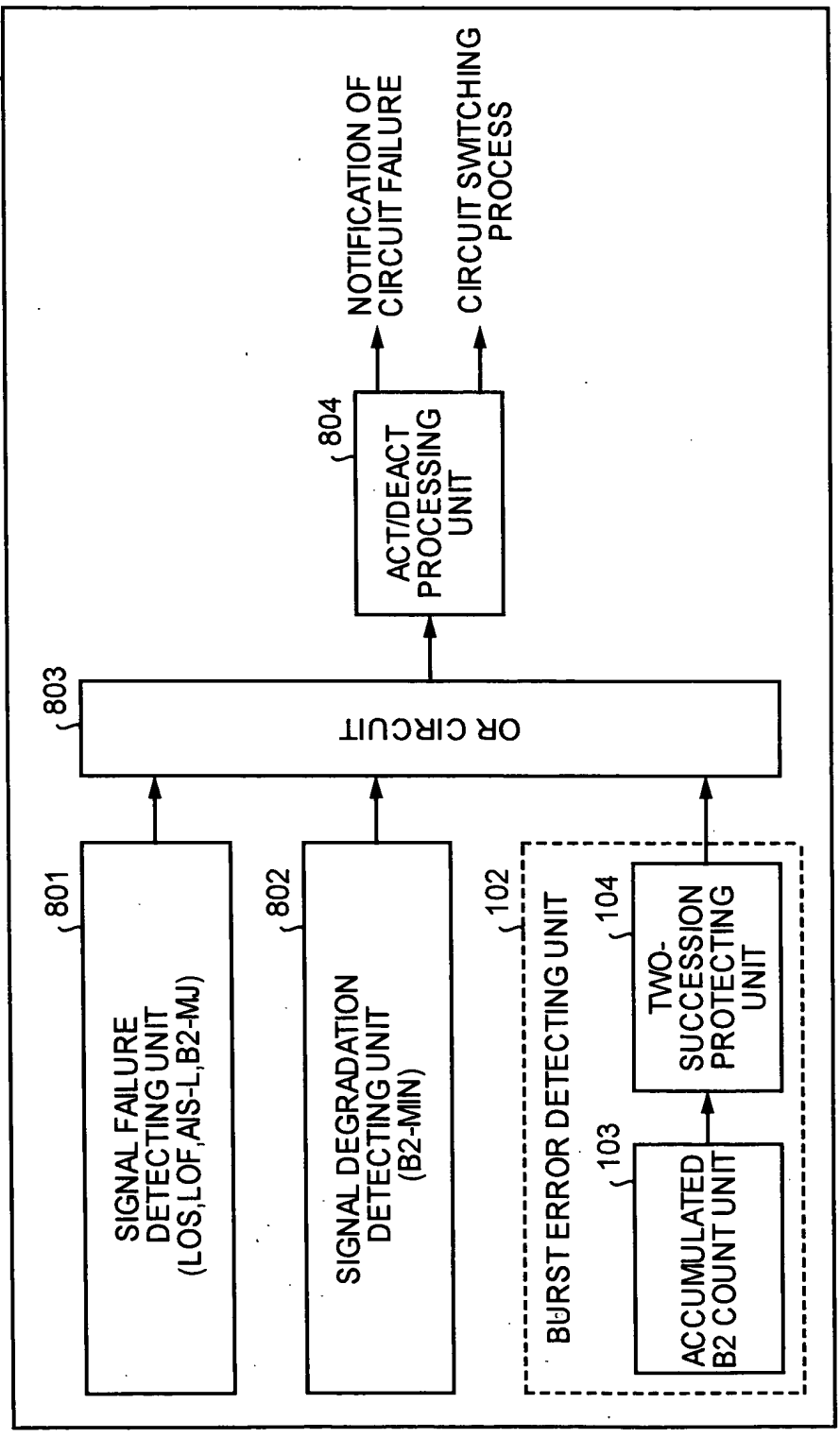

101
NOTIFICATION OF CIRCUIT FAILURE
CIRCUIT SWITCHING PROCESS
804
ACT/DEACT PROCESSING UNIT
803
OR CIRCUIT
801
SIGNAL FAILURE DETECTING UNIT (LOS,LOF,AIS-L,B2-MJ)
802
SIGNAL DEGRADATION DETECTING UNIT (B2-MIN)
102
BURST ERROR DETECTING UNIT
104
TWO-SUCCESSION PROTECTING UNIT
103
ACCUMULATED B2 COUNT UNIT

FIG.2

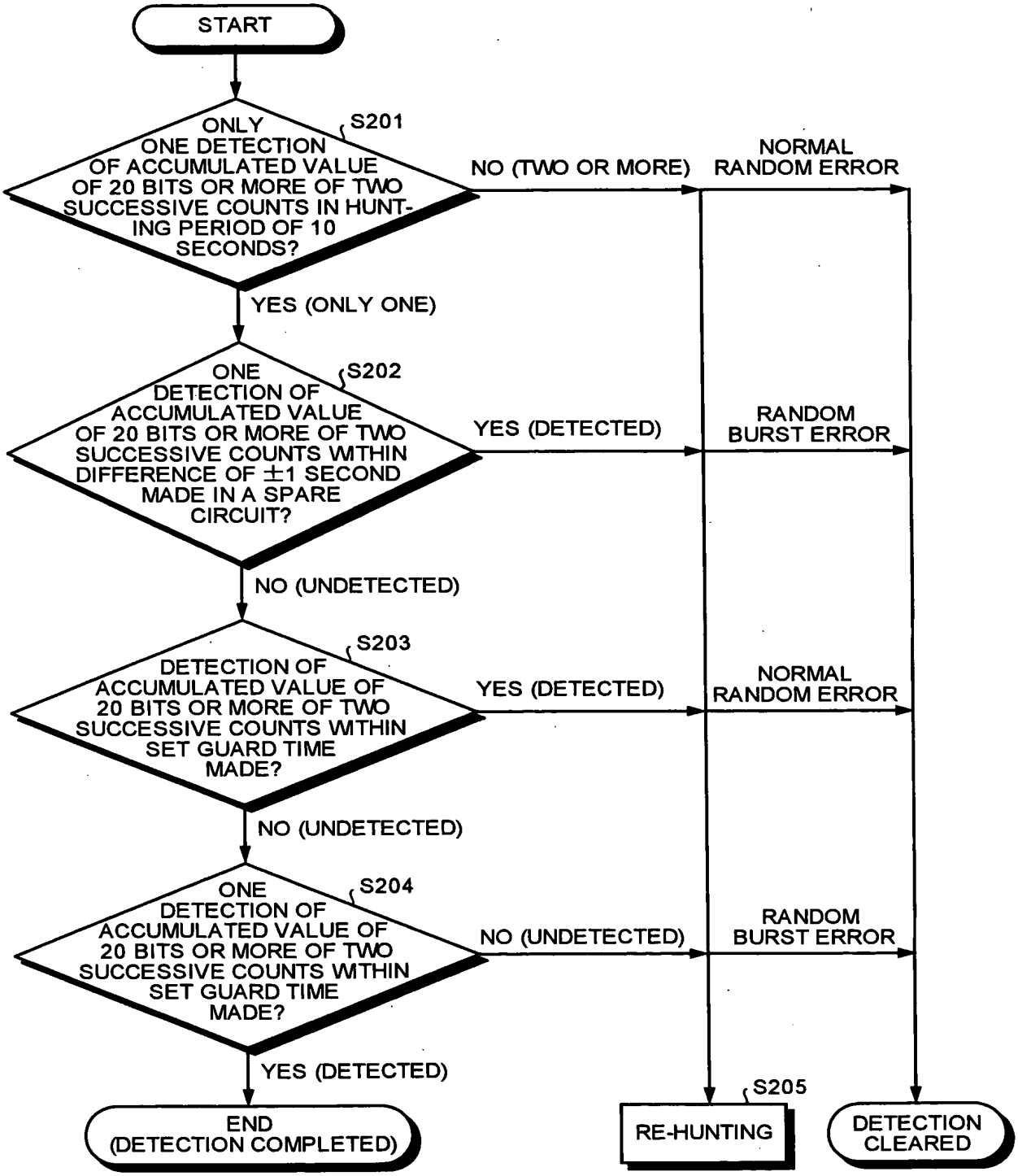

START
S201
ONLY ONE DETECTION OF ACCUMULATED VALUE OF 20 BITS OR MORE OF TWO SUCCESSIVE COUNTS IN HUNTING PERIOD OF 10 SECONDS?
NO (TWO OR MORE)
NORMAL RANDOM ERROR
YES (ONLY ONE)
S202
ONE DETECTION OF ACCUMULATED VALUE OF 20 BITS OR MORE OF TWO SUCCESSIVE COUNTS WITHIN DIFFERENCE OF ±1 SECOND MADE IN A SPARE CIRCUIT?
YES (DETECTED)
RANDOM BURST ERROR
NO (UNDETECTED)
S203
DETECTION OF ACCUMULATED VALUE OF 20 BITS OR MORE OF TWO SUCCESSIVE COUNTS WITHIN SET GUARD TIME MADE?
YES (DETECTED)
NORMAL RANDOM ERROR
NO (UNDETECTED)
S204
ONE DETECTION OF ACCUMULATED VALUE OF 20 BITS OR MORE OF TWO SUCCESSIVE COUNTS WITHIN SET GUARD TIME MADE?
NO (UNDETECTED)
RANDOM BURST ERROR
YES (DETECTED)
END (DETECTION COMPLETED)
S205
RE-HUNTING
DETECTION CLEARED

FIG.3

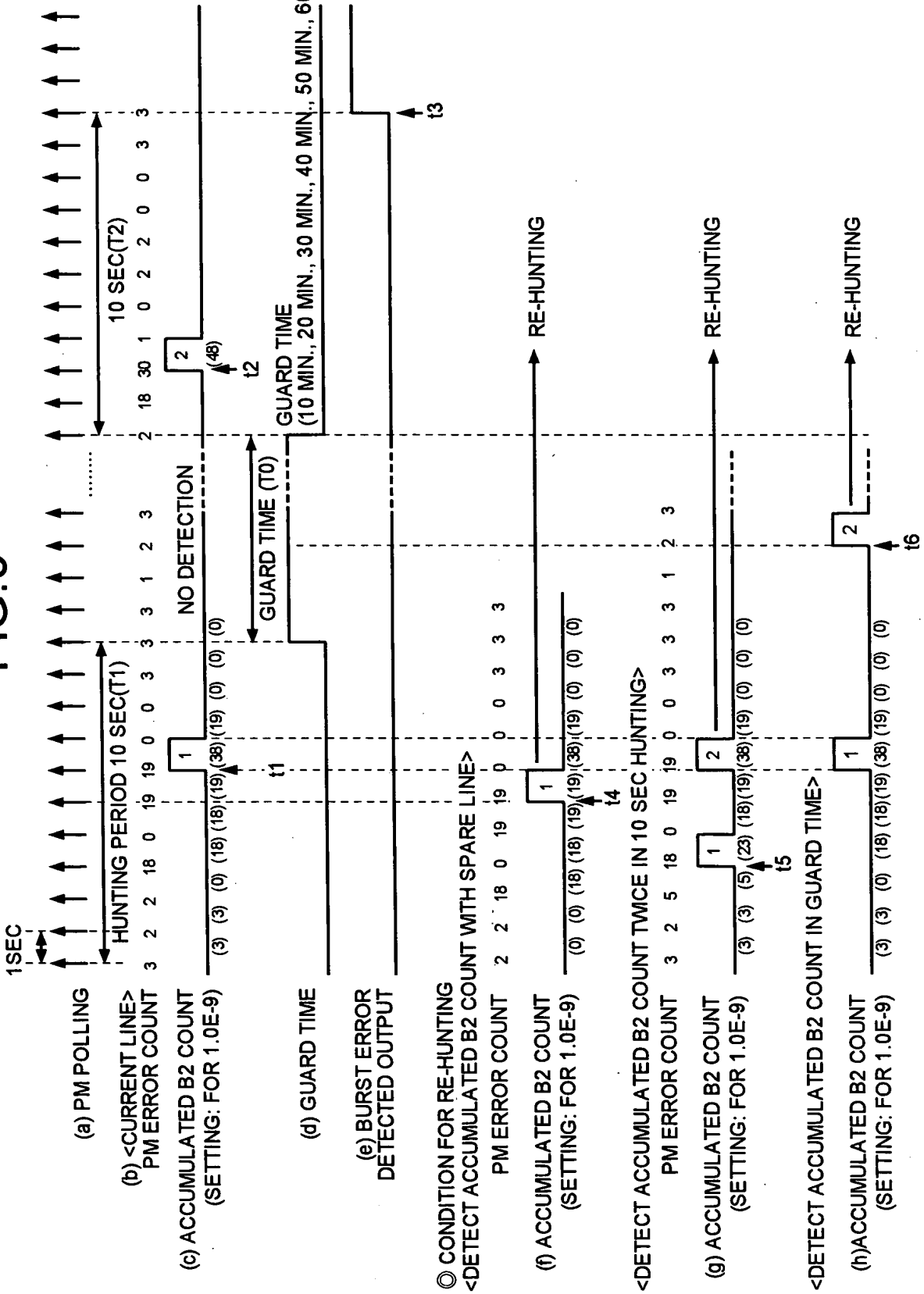

1SEC
(a) PM POLLING
HUNTING PERIOD 10 SEC(T1)
10 SEC(T2)
(b) <CURRENT LINE>
PM ERROR COUNT
3 2 2 18 0 19 19 0 0 3 3 3 1 2 3 2 18 30 1 0 2 2 0 0 3 3
(c) ACCUMULATED B2 COUNT
(SETTING: FOR 1.0E-9)
(3) (3) (0) (18) (18) (19) (38) (19) (0) (0) (0)
NO DETECTION
GUARD TIME (T0)
GUARD TIME
(10 MIN., 20 MIN., 30 MIN., 40 MIN., 50 MIN., 60 MIN.)
(48)
t1
t2
t3
(d) GUARD TIME
(e) BURST ERROR
DETECTED OUTPUT
◎ CONDITION FOR RE-HUNTING
<DETECT ACCUMULATED B2 COUNT WITH SPARE LINE>
PM ERROR COUNT 2 2 18 0 19 19 0 0 0 3 3 3
(f) ACCUMULATED B2 COUNT
(SETTING: FOR 1.0E-9)
(0) (0) (18) (18) (19) (19) (38) (19) (0) (0) (0)
RE-HUNTING
t4
<DETECT ACCUMULATED B2 COUNT TWICE IN 10 SEC HUNTING>
PM ERROR COUNT 3 2 5 18 0 19 19 0 0 3 3 3 1 2 3
(g) ACCUMULATED B2 COUNT
(SETTING: FOR 1.0E-9)
(3) (3) (5) (23) (18) (19) (38) (19) (0) (0) (0)
RE-HUNTING
t5
<DETECT ACCUMULATED B2 COUNT IN GUARD TIME>
(h)ACCUMULATED B2 COUNT
(SETTING: FOR 1.0E-9)
(3) (3) (0) (18) (18) (19) (38) (19) (0) (0) (0)
RE-HUNTING
t6

FIG.4

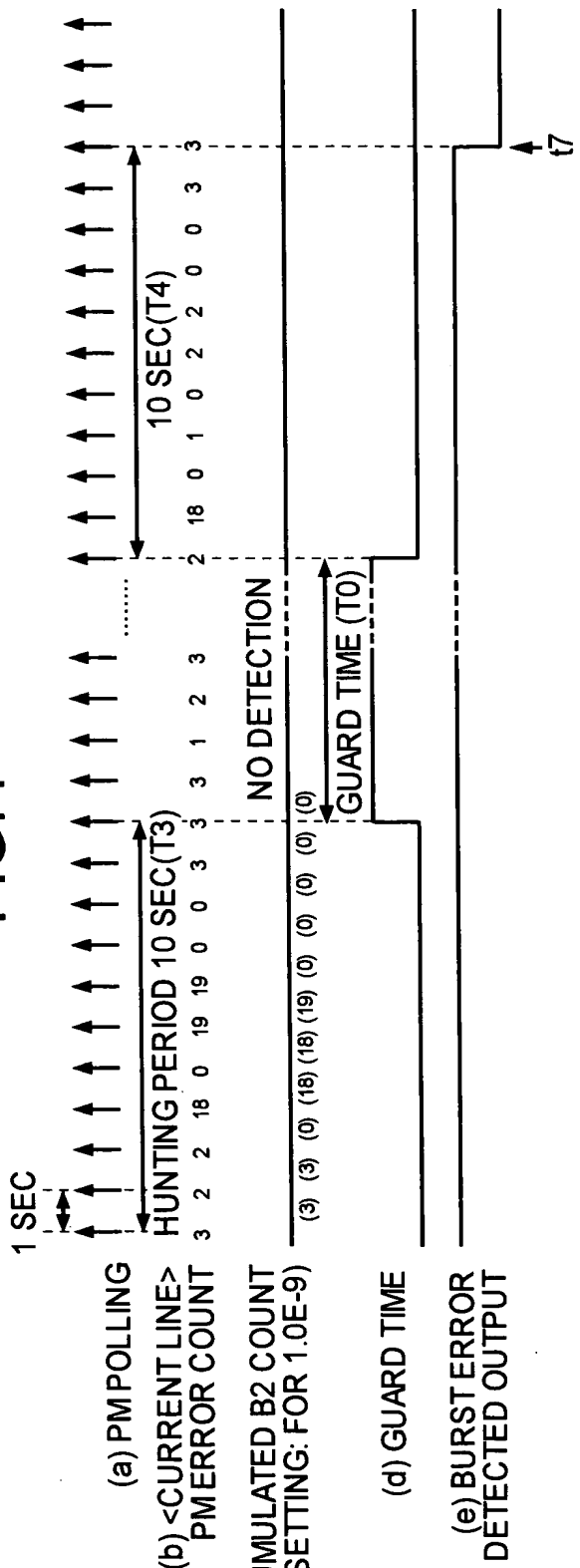

1 SEC
(a) PM POLLING
HUNTING PERIOD 10 SEC(T3)
10 SEC(T4)
(b) <CURRENT LINE> PM ERROR COUNT
3 2 2 18 0 19 19 0 0 3 3 3 1 2 3 ..... 2 18 0 1 0 2 2 0 0 3 3 3
NO DETECTION
GUARD TIME (T0)
(c) ACCUMULATED B2 COUNT (SETTING: FOR 1.0E-9)
(3) (3) (0) (18) (18) (19) (0) (0) (0) (0) (0)
(d) GUARD TIME
(e) BURST ERROR DETECTED OUTPUT
t7

FIG.5

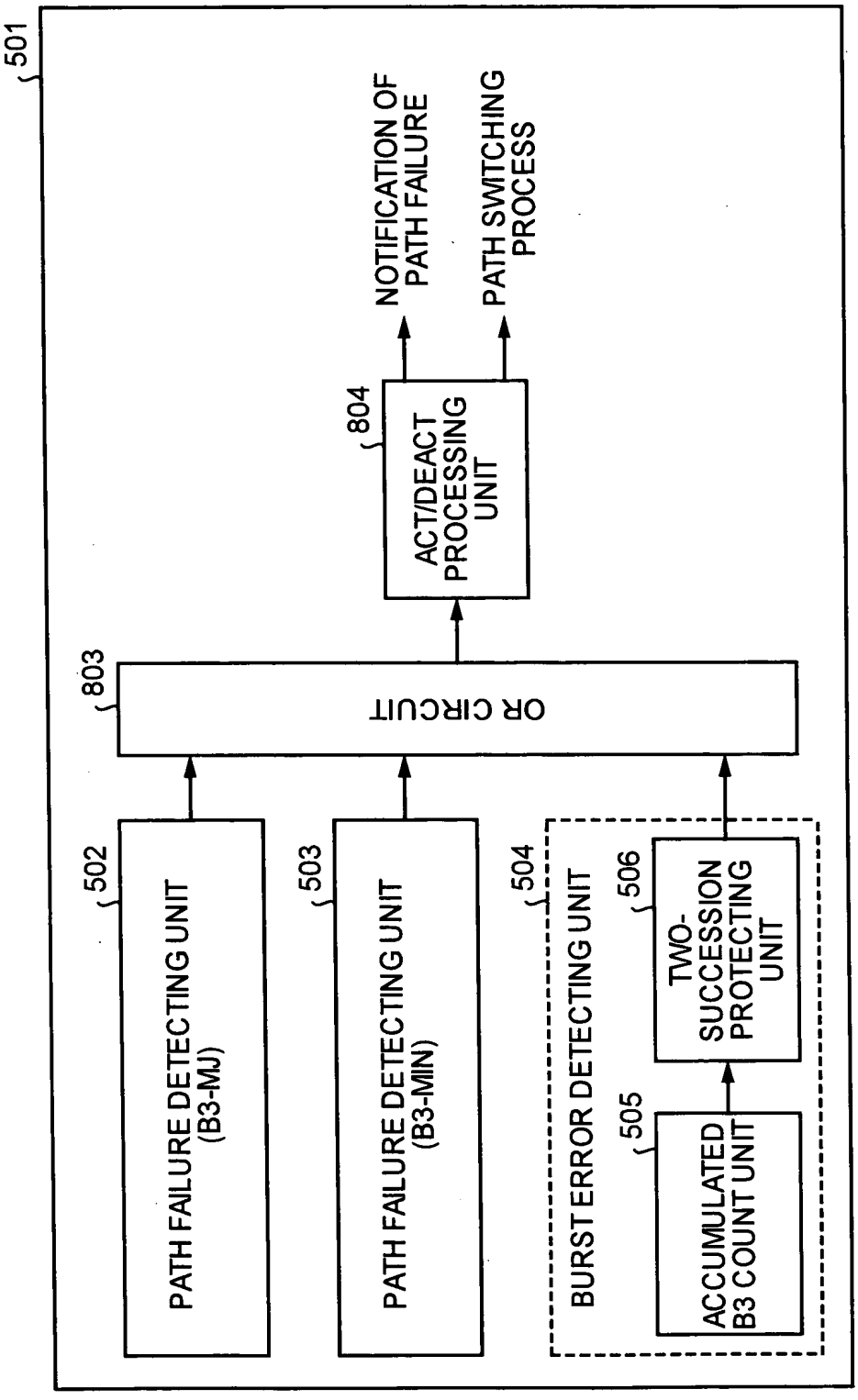

501
NOTIFICATION OF PATH FAILURE
PATH SWITCHING PROCESS
804
ACT/DEACT PROCESSING UNIT
803
OR CIRCUIT
502
PATH FAILURE DETECTING UNIT (B3-MJ)
503
PATH FAILURE DETECTING UNIT (B3-MIN)
504
BURST ERROR DETECTING UNIT
506
TWO-SUCCESSION PROTECTING UNIT
505
ACCUMULATED B3 COUNT UNIT

FIG.6A

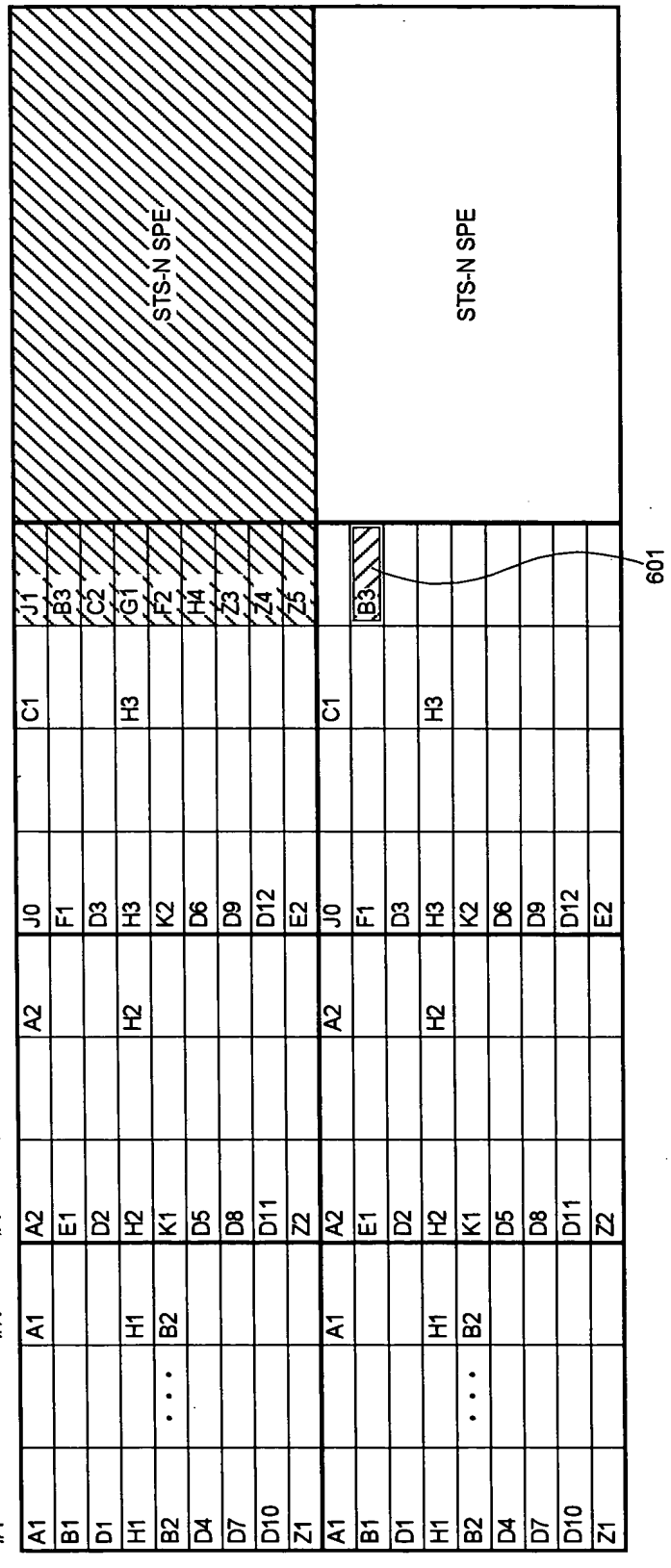

#1
#N
#1
#N
#1
#N
#1
#2
#3
#NX87
N X 90 BYTES
9 BYTES
STS-N SPE
STS-N SPE
601

FIG.6B

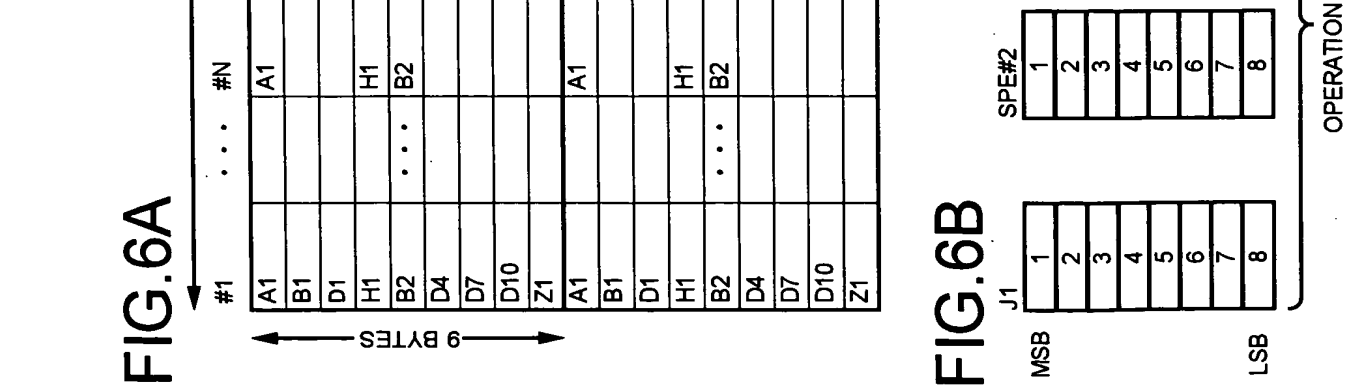

J1
MSB
LSB
SPE#2
J2
B3
OPERATION RANGE

FIG.7

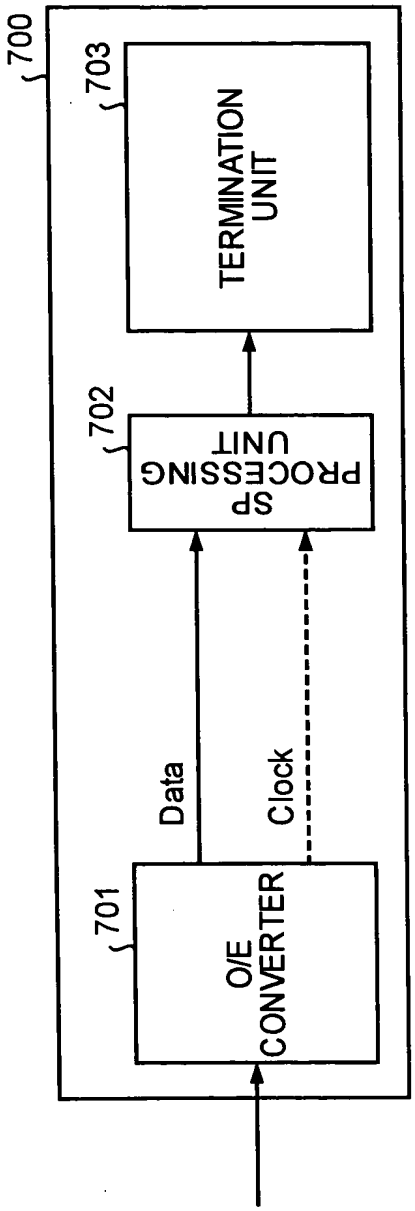

700
703
TERMINATION UNIT
702
SP PROCESSING UNIT
Data
Clock
701
O/E CONVERTER

FIG.8

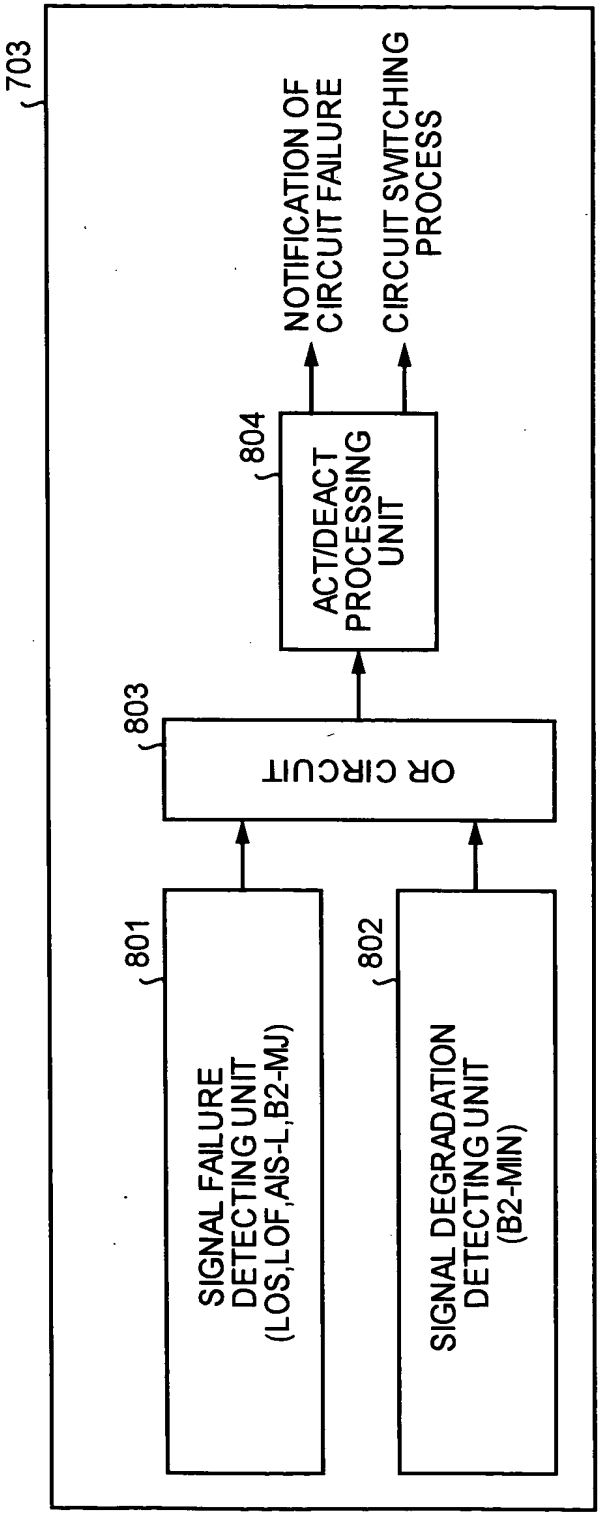

703
801
SIGNAL FAILURE DETECTING UNIT (LOS,LOF,AIS-L,B2-MJ)
802
SIGNAL DEGRADATION DETECTING UNIT (B2-MIN)
803
OR CIRCUIT
804
ACT/DEACT PROCESSING UNIT
NOTIFICATION OF CIRCUIT FAILURE
CIRCUIT SWITCHING PROCESS

FIG.9A

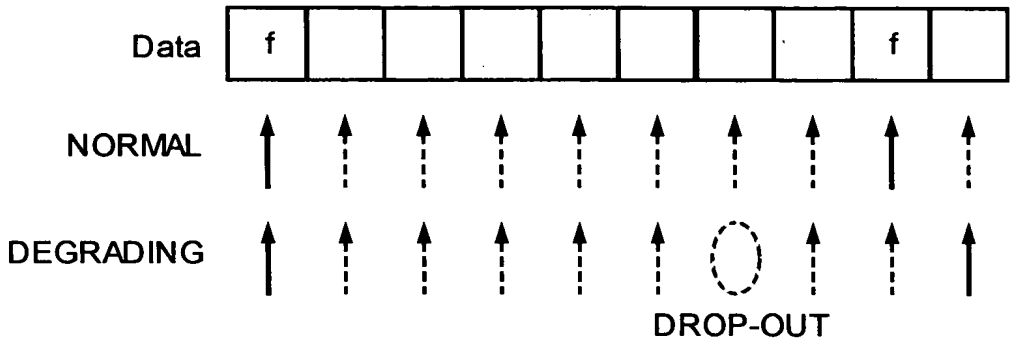
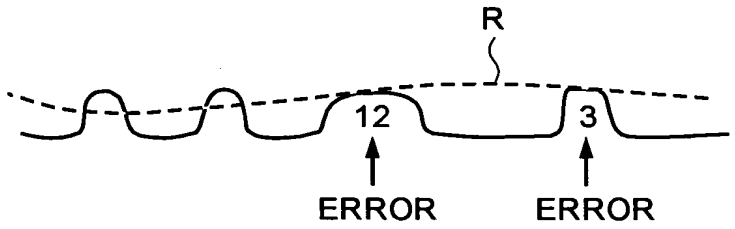


FIG.9B



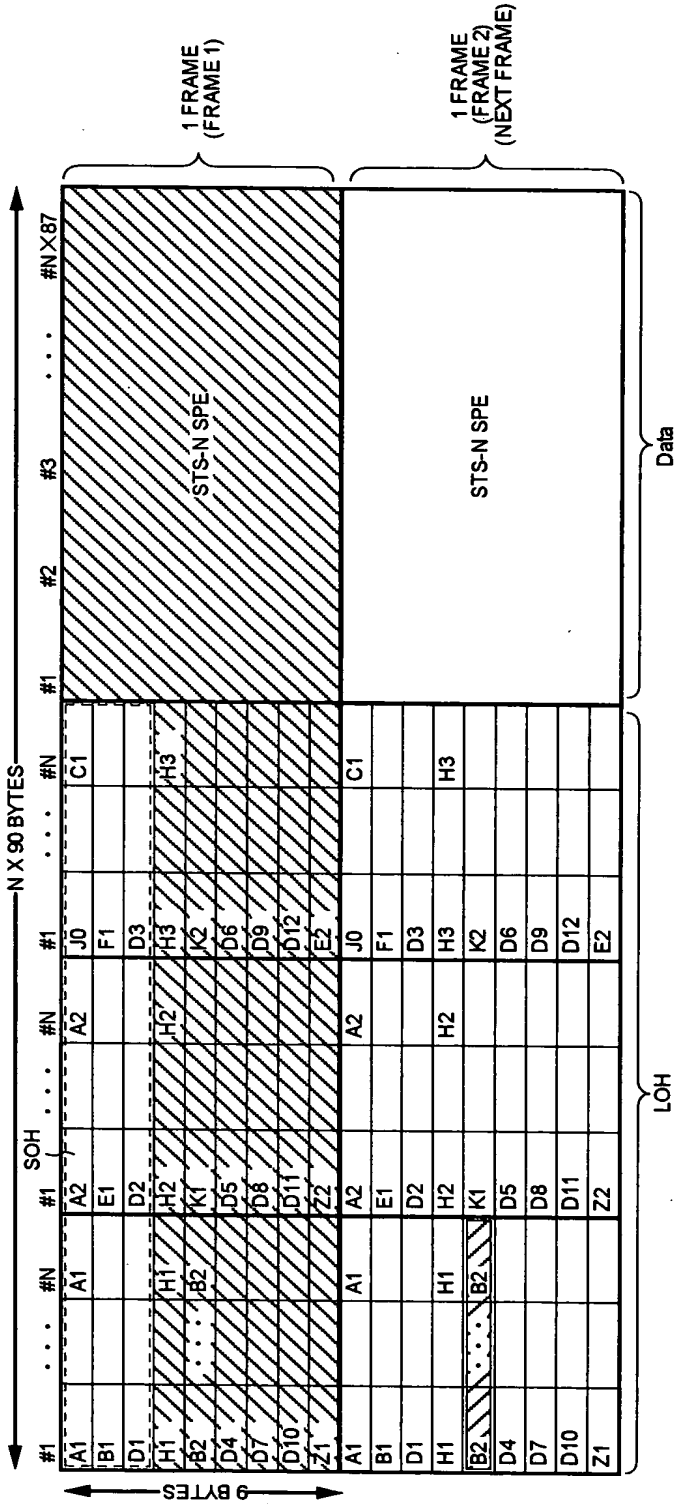


FIG. 10A

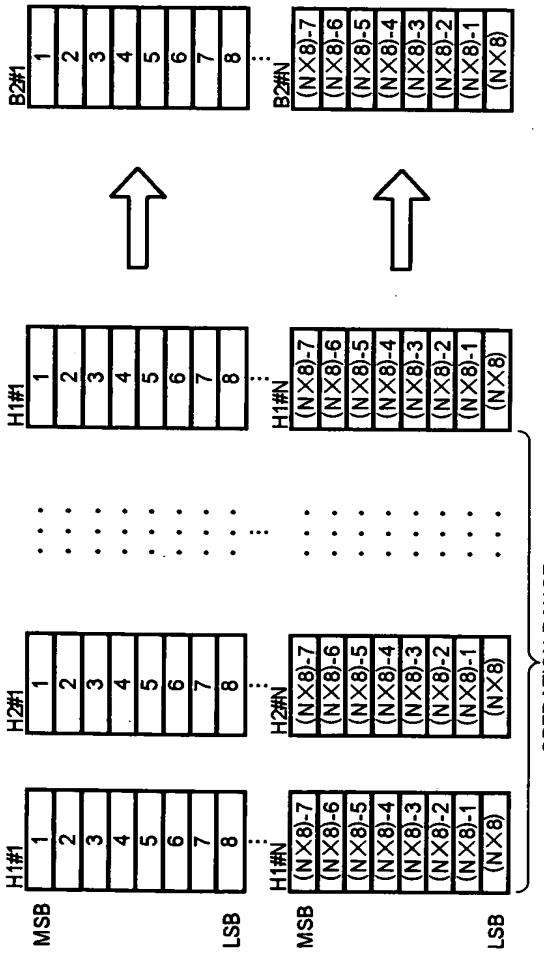


FIG. 10B

FIG.11

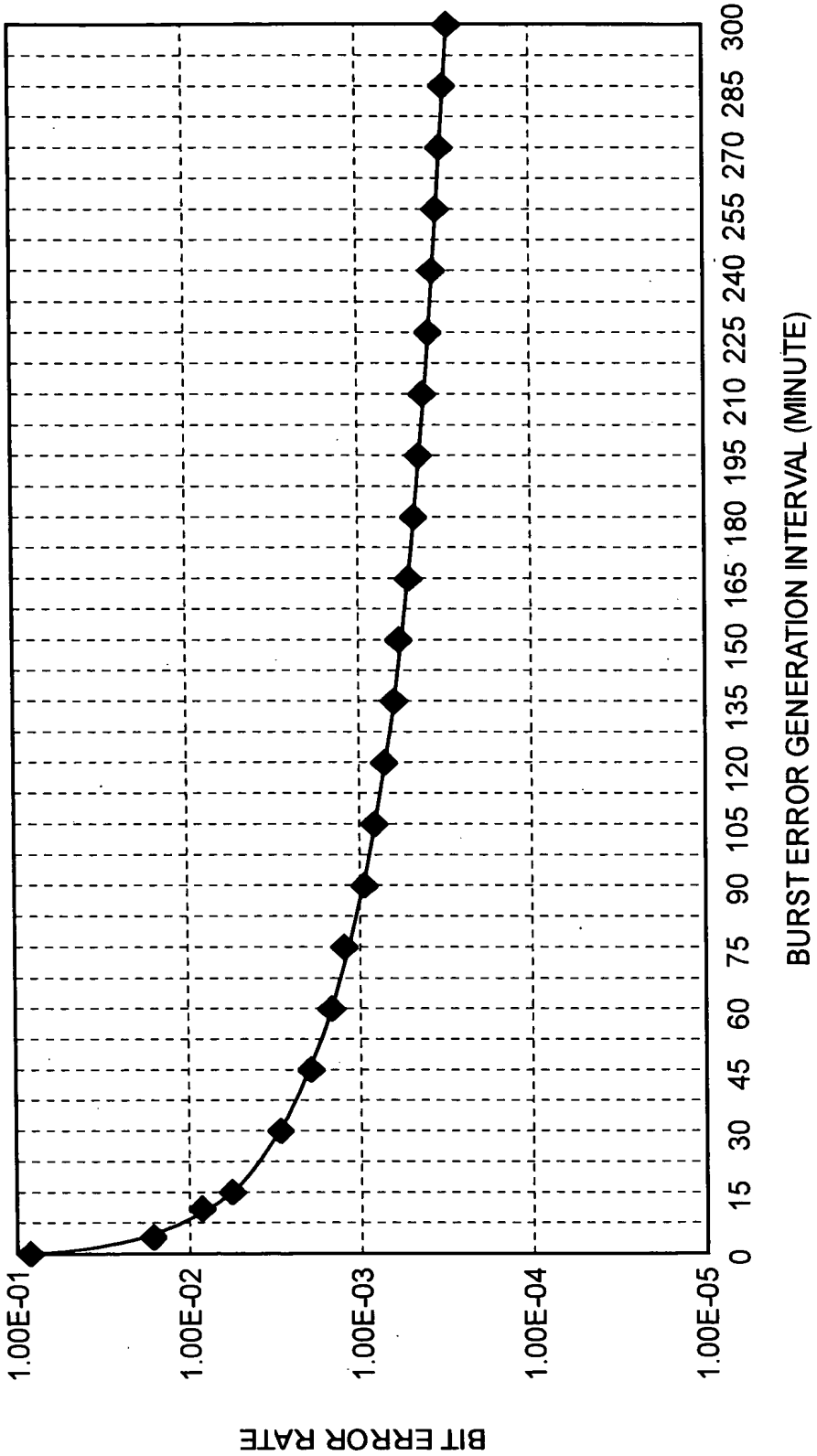

BIT ERROR RATE
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
0 15 30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300
BURST ERROR GENERATION INTERVAL (MINUTE)

FIG. 12

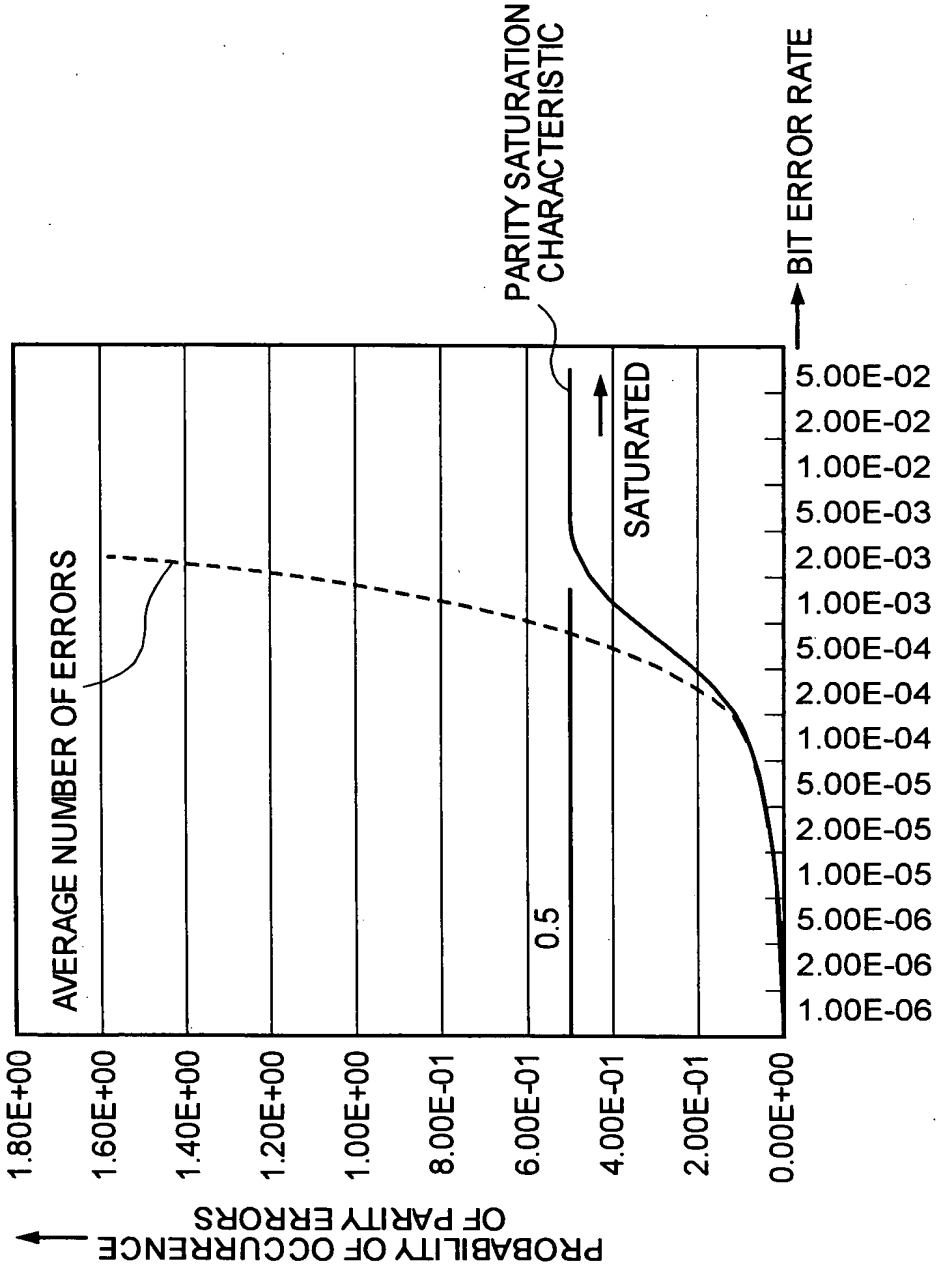

PARITY SATURATION CHARACTERISTIC
BIT ERROR RATE
AVERAGE NUMBER OF ERRORS
SATURATED
0.5
PROBABILITY OF OCCURRENCE OF PARITY ERRORS
1.80E+00
1.60E+00
1.40E+00
1.20E+00
1.00E+00
8.00E-01
6.00E-01
4.00E-01
2.00E-01
0.00E+00
5.00E-02
2.00E-02
1.00E-02
5.00E-03
2.00E-03
1.00E-03
5.00E-04
2.00E-04
1.00E-04
5.00E-05
2.00E-05
1.00E-05
5.00E-06
2.00E-06
1.00E-06

FIG.13

BIT ERROR RATE	DETECTION CIRCUIT STANDARDS								THEORETICAL VALUE
	MONITOR FRAME LENGTH	MONITOR TIME (SEC)	NUMBER OF ERRORS	NUMBER OF SUCCES-SIONS	DETEC-TION TIME (SEC)	NUMBER OF DETECTED ERRORS	NUMBER OF DETEC-TIONS PER SECOND	SIMPLY COMPUTED ERROR RATE	1 SEC (8000 FRAMES) PM COUNT
1.0E-03	1	0.00013	150	58	0.00725	8700	1,200,000	4.88E-04	2,460,672
1.0E-04	9	0.00113	204	7	0.00788	1428	181,333	7.37E-05	246,067
1.0E-05	90	0.01125	204	7	0.07875	1428	18,133	7.37E-06	24,607
1.0E-06	900	0.11250	204	7	0.78750	1428	1,813	7.37E-07	2,461
1.0E-07	9,000	1.12500	204	7	7.87500	1428	181	7.37E-08	246
1.0E-08	90,000	11.25000	204	7	78.75000	1428	18	7.37E-09	25
1.0E-09	900,000	112.50000	204	7	787.50000	1428	2	7.37E-10	2